Degree: MPH-45

Field of Study: Global Health

Practicum Project Abstracts 2023

Project Title	Project Summary or Abstract
Emergency Medicine Capacity Building in Bihar, India	The strengthening of emergency health systems has been demonstrated to be important to decreasing the burden of morbidity and mortality in LMICs and foundational to the ability to respond to acute and large-scale casualty events. According to the Disease Control Priorities Project, up to 45% of disease burden that is experienced in LMICs can be initially addressed in the acute care setting, where improvement of care can limit or prevent disease progression and excess morbidity and/or mortality. As seen in acute crises such as the Ebola epidemic of West Africa and the COVID-19 pandemic, a robust emergency care system is foundational in the acute management and triage of patients while providing several important contributions to the public health system of a country. The state of India suffered one of the worst COVID-19 waves, with many hospitals running out of treatments such as oxygen and contributing to more than 480,000 recorded deaths, the second highest number of deaths in the world. Bihar State, one of the poorest and most rural states in India, suffered similar strain during the pandemic due to limited consumables, an undertrained and understaffed healthcare work force, and limited emergency and critical care infrastructure. The Ministry of Health and the District Hospital system has been chronically underfunded and lags significantly behind other states in India in key health indicators. The COVID-19 pandemic further demonstrated limitations in emergency care and triage in MOH District hospitals in Bihar, which included no functioning triage system, limited or non-existent infection prevention and control, critical staff and consumable shortages, and limited availability of oxygen. Furthermore, significant disparities have been identified in the development of emergency care systems in India. Fragmentation of services from pre-hospital to hospital care in both governmental and private sectors have been noted in Bihar. Furthermore, the limited access to emergency medicine trained physicians from academic departments has also been noted to limit the emergency

	care capacity in the state and country overall. Key recommendations from a 2020 report entitled "Emergency and Injury Care at District Hospitals in India" prioritizes the development of a robust and integrated emergency care system that includes inclusion of triage, standardized protocols, and standard operating procedures as the crux of improving emergency care in India. Through a partnership with the Harvard Teaching Hospitals (HTHs) team—a collaboration of emergency medicine and public health experts from Harvard affiliated medical institutions—CARE India and the MOH of Bihar seek to develop an emergency care mentorship program that will place emergency physicians and nurses at the bedside to provide real time educational teaching of identified topics in emergency care through 'just in time' teaching, simulation, case discussions, and a triage system at 5 pilot district hospitals in Bihar State in order to improve and strengthen the health care system through emergency care capacity building. Methods The specific goals of my involvement in the emergency care mentorship program in Bihar State, India are the following: • Evaluation of requested and required pediatric emergency medicine educational topics. • Evaluation of requested teaching modalities for learners. • Development of pediatric emergency medicine curriculum that will be implemented within an overall emergency medicine curriculum in India. • Development of a list of teaching modalities to deliver the emergency medicine curriculum. • Implementation of the monitoring and evaluation infrastructure and training of local emergency care mentors.
Harnessing Human Capital: A Capacity-Building Algorithm for Spine Surgery in Developing Countries	By 2020, surgery was recognized as a crucial component of healthcare especially in LMICs. In particular, the burden of trauma and degenerative disease is growing, outpacing infectious diseases. Spinal pathology including degenerative conditions, tumours, infections, and traumatic spinal injuries (TSI) i.e. fractures & spinal cord injury (SCI), cause significant disability. There is currently no detailed framework and strategy for how to implement the practice of spine surgery safely in LMICs. Through my practicum, I worked with providers at the MGH Trauma Research Team, Orthopeadic Link, and

	the Harvard Program for Global Surgery and Social Change to conduct an on-the-ground assessment of a phone-based application for spine surgery capacity building. This phone-based application had questions developed based on the Lancet NSOAP and the GSCI Pathway. I travelled to Botswana where after obtaining IRB approval from the Ministry of Health and Wellness, I worked with an Orthopedic Surgeon at Gaborone Private Hospital to characterize the state of surgical equipment and personnel for spine surgery patients in Botswana. The end result was a patient care journey that can be used for denoting branch points at which spine surgery care can be optimized.
Creating fiscal space for the expansion of surgical healthcare worldwide: an edited volume on innovative financing mechanisms	5 billion people lack access to safe affordable essential surgery in our world today – most of whom live in low- and middle-income countries (LMICs). Without appropriate interventions to address this, the lost economic output in LMICs through surgical diseases by 2030 is estimated at 12 trillion US dollars. There has been increasing awareness about the need for a coordinated strategy for scaling up surgical care in LMICs and financing such efforts will be an essential component of this. For my practicum I partnered with two organizations – the Harvard Health Systems Innovation Lab (Boston) and the Global Surgery Foundation (Geneva) – to develop recommendations for financing global surgery by defining current best practices in financing global health. To this end, I evaluated financing practices of major players in the global health space including the Global Fund, Global Financing Facility, Global Innovation Fund, PATH foundation, Drugs for Neglected Diseases initiative (DNDi) and other organizations. This involved review of publicly available data of organization structures, financing streams and budgets, key informant interviews of individuals well acquainted with the financing practices of these organizations as well as interviews of surgeons and leaders in the global surgery sphere.
Caregiver Perspectives on a Pediatric Surgical Delivery Program in Kakuma Refugee Camp in Turkana County, Kenya	Although current literature demonstrates increasing focus on patient-centered outcomes in surgical efficacy evaluations, a paucity of research investigating the perspectives of global surgery beneficiaries, particularly refugees, exists. Language, logistical barriers, and ethical considerations, amongst other concerns, pose significant challenges to gaining stakeholder feedback in humanitarian contexts. This pilot study sought to directly elucidate refugee and Turkana caregivers’ perspectives on key barriers to accessing surgical care and the impact of pediatric surgery delivery on their families in Turkana County, Kenya. The study constituted a qualitative evaluation of a United Nations High Commissioner for Refugees (UNHCR), International Rescue Committee (IRC), and Turkana County

	Ministry of Health, -funded pediatric surgery program in Kakuma Refugee Camp and Lodwar County Referral Hospital. 18 refugee and Turkana caregivers of children identified as surgical candidates were interviewed. Caregivers of patients who had received surgery expressed greater mean ratings of care affordability, timeliness, and equity [2.91 (+/-1.04), 3.73 (+/-1.27), 3.00 (+/-1.00)], as compared to caregivers whose children had not [2.29 (+/-0.95), 3.43 (+/-1.51), 2.86 (+/-0.38)]. Qualitative analysis of caregiver interviews revealed prevalent themes of healthcare quality concerns and inadequate provider follow-up across both cohorts. Caregivers of children who had yet to receive surgery particularly expressed lack of clarity and/or effective communication throughout the care timeline and high out-of-pocket expenditures. Conversely, caregivers of children who received surgery commonly reported psychological impacts of surgery, a dearth of medical resources, and healthcare access. This stakeholder feedback stresses the need to prioritize surgery, especially pediatric surgery, in global health.
An analysis of HIV community testing in Ireland	I undertook my practicum at the Health Protection and Surveillance Centre(HPSC) in Dublin, Ireland. The HPSC is the national Irish center for infectious disease surveillance and control. My practicum involved undertaking a review of HIV community testing in Ireland which took place in the year 2021. I obtained testing data from the relevant testing sites and organizations, compiled it, performed statistical analysis on it and then wrote up a report alongside my supervising team. This report was then published on the HPSC website.
Provision of High-Quality Technical Expertise on Child Poverty and Social Protection for UNICEF, 2022-2025 - Health Component	This past year, I worked with Development Analytics, who signed a Long-Term Agreement with UNICEF to support its Regional Centers and Country Offices during the period of 2022-2025 on analytical work for integrated programme areas and inclusive social protection. In the area of health, the goal is to support UNCIEF in its efforts to expand health insurance coverage for the most poor and marginalized households, as well as identify gaps in basic health coverage services. Leveraging their deep expertise in large-scale data analysis using microeconometric and machine learning techniques, Development Analytics will support UNICEF in the development of integrated social protection programmes to also include these activities ensuring access to health care for project recipients (children in regional and country programmes). To support this goal, I completed a literature review, including interviews with UNICEF Country Office

	Health Specialists, of cash-plus programmes and health interventions that have been implemented by UNICEF. From this research, I developed five research proposals on which Development Analytics could collaborate with UNICEF Country Offices, utilizing their strengths in the provision of models and analytical tools for social policy and programme development. I also aided in the development of an outreach campaign to connect with UNICEF Country Offices. Focusing on two strategies, I developed three country-specific decks for CO discussions (Nigeria, Nepal, Peru). I will continue to support the team in discussions with UNICEF regional and country offices to design and implement projects.
Health System Reform in Morocco and Health Financing and Service Delivery Strengthening in Tunisia	The Government of Morocco seeks to redesign the health system to improve the quality and availability of public health services. The reform seeks to improve the quality, equity, and resiliency of the health system through two components: i) demand-side financial protection reform, and ii) supply-side health system redesign program. This project is part of the Pay for Results program which supports the Government's health sector supply reform. The health sector supply reform is summarized under four pillars: 1. Strengthening organizational and institutional capacity for health system governance 2. Improved availability and competence of human resources for health 3. Reorganized health service delivery 4. Strengthened pharmaceutical regulatory and production capacity: This work included literature review and evidence synthesis and summary of peer-reviewed and gray literature on pillars 1) to 3) of the reform. The work was included in the Technical Assessment and in the upcoming Program Appraisal Document of the Morocco Country Partnership Framework. In response to lagging health outcomes and fragmented governance, the Government of Tunisia finalized a comprehensive National Health Policy (Politique nationale de santé, PNS), based on five pillars: 1. scaling up of family medicine as the entry point to health sector reform, focusing on strengthening primary care to improve efficiency; 2. introduction of an essential benefits package that is guaranteed to all citizens;

	3. merging financial risk protection schemes and covering the entirety of the population with a basic health insurance modality; 4. capacitating service delivery in the public sector to reduce inequalities in service delivery across the country; and 5. engendering a focus on prevention through promoting multisectoral approaches. The government has requested support for the operationalization of the PNS, which is being supported by a World Bank grant through the development of policy options. The technical engagement focusing on the health system in Tunisia will inform the definition of future engagement to operationalize ambitious health sector reforms. This work included literature review on provider payment methods and best practices for purchasing services, with an emphasis on Non Communicable Diseases, with the aim to provide policy recommendations to the Government.
The Public Health Company: Developing a Public-Health-As-A- Service (PhAAS) Product to Improve Operational Continuity during Bio-Threats	My work at the PHC was split across two teams: headlines and customer success. As part of the headlines team, I was responsible for sourcing new information on a daily basis in the health discourse (e.g., updated guidance on vaccination, new outbreak of Ebola) and creating a summary for PHC's clients. This included providing PHC's perspective on the impact of this information on businesses, their operations, and employees. Additionally, I suggested and led the work on an analytics dashboard to better understand customer engagement with the headlines feature, guide editorial decisions, and identify opportunities for new content creation. As part of the customer success team, I worked in a client-facing role to better understand customer needs, optimize the platform, provide updates on new platform iterations, and write guidelines. This involved working with executive directors at prominent companies such as Google and Asana.
Mental Health Education and Support for Female Head Porters in Accra, Ghana	The project educated a vulnerable group in Ghana called "Kayayei". They are female head porters found in major cities carrying goods on their head for a fee. They are mostly subjected to verbal abuse, mistreatment, sexual harassment, poverty among others which affect their mental health. With the host organization, they were educated on some mental health disorders and how to identify that when they experience or see someone experience that. They were provided information on

	seeking help on issues affecting their mental health including access to the host organization that provides psychotherapy. Health screening was done and beads making was taught as part of the organization's capacity building work. A documentary video highlighting their plight and mistreatment was made for advocacy.
Health Burden of Preventable Hospitalizations Attributable to Diabetes Mellitus and its Complications in Mexico	Background: The prevalence of diabetes in Mexico has increased significantly over the past ten years, with poor improvement in diabetic control. Hospitalizations for complications of diabetes, including diabetic retinopathy, neuropathy, diabetic foot, kidney failure, and amputation, pose a significant burden on Mexico's health system yet are preventable with timely care in the primary care setting. However, there are no recent estimates of the burden of preventable hospitalizations due to diabetes, which are necessary to inform public health policy decision making. Here we estimate the health burden of preventable hospitalizations due to diabetic complications in Mexico's state hospital system from 2016-2021. Methods: Using anonymized national discharge data from 769 general hospitals in Mexico, we identified hospitalizations whose primary cause was diabetic retinopathy, diabetic neuropathy, diabetic foot, kidney failure related to diabetes, and amputation. Results: We identified a total of 259,296 hospitalizations due to one of five diabetic complications, of which diabetic foot and amputation made up 70.8%. Hospitalizations decreased by 33% in 2020, with notable decreases in all diabetic complications through 2021. Kidney failure was found to be the largest contributor of DALYs, despite a 75% decrease from 2015 to 2021. Conclusion: Despite a decrease in overall burden of preventable hospitalizations due to diabetic complications, access to care for diabetic complications was interrupted in early 2020 by the COVID-19 pandemic and the removal of Seguro Popular. Continued evaluation of the burden of preventable hospitalizations due to diabetic complications is necessary to evaluate the long-term effects of the pandemic and the removal of Seguro Popular on the prevalence of diabetic complications in Mexico.
Challenges and Opportunities for National	Advancing the Immunization Agenda 2030, routine immunization programs around the world face different challenges in achieving universal immunization coverage. This project focuses on the

Immunization Programs in Southeast Asia	programs in Southeast Asia, particularly Indonesia and Thailand. Indonesia showed one of the biggest backslide in immunization goals since the COVID-19 pandemic, meanwhile Thailand has maintained high immunization rates throughout the same years. What drives these differences between the countries?
Implementation of Behavior Change Theories in Promoting the Health of Adolescents in India	During my practicum, I supported Adolescent Health Champions (AHC) with two initiatives in the Indian regions of Jharkhand and Rajasthan. One of the projects focused on adolescent girls attending Kasturba Gandhi Balika Vidyalayas (KGBVs) in the districts of Bokaro and West Singhbhum, Jharkhand. The initiative involved implementing a three-part curriculum on adolescent health across 27 KGBV schools in these two districts. In Rajasthan, I aided AHC in launching a pilot mental health program in five rural government schools located in Lunkaransar, Bikaner District.
Primary Health Care Utilization in Bangkok, Thailand	Bangkok has a low rate of primary health care (PHC) utilization. Even though PHC is more accessible and less expensive, and Bangkok's tertiary hospital is congested, people still prefer to visit hospitals. There were efforts to increase the utilization of PHC in Bangkok. This study aimed to describe the characteristics of PHC users and the factors associated with using the Universal Health Coverage Scheme (UHC) as opposed to paying out-of-pocket at PHC. We analyzed the data from the Health and Welfare Survey 2021 using logistic regression analysis. Adjusting for wealth quartile, we found that the odds of utilizing PHC are six times (95% CI = 2–23 times) greater for those who use UHC than for those who use the Civil Servant Scheme (CSS). Adjusting for insurance type, the odds of utilizing PHC are 54% lower (95% CI = 15%–75%) for those in the richer wealth quartiles compared to those in the poorer wealth quartiles. Among those who utilize PHC, the elderly, those with underlying diseases, and those with a history of NCD visits were more likely to use UHC rather than pay out-of-pocket. Utilization of PHC may reflect the gatekeeper mechanism of the UHC that did not apply to CCS or the social security scheme, the public's trust in PHC services, and their accessibility. To promote the utilization of PHC, evaluations of PHC performance and policy considerations should be considered.
Improving outcomes for survivors of sexual violence in conflict	My practicum involved a variety of activities that aimed to improve outcomes for survivors of sexual violence in conflict. This included work in a variety of settings, mainly Iraq and Ethiopia, with a team of human rights and humanitarian policy researchers, as well as with a human rights NGO.
WHO Universal Health Coverage Compendium	The UHC Compendium is a database of health services and interventions designed to assist countries in making progress towards UHC by providing a framework for thinking about health services and

	health interventions. The UHC Compendium database includes all promotive, preventive, resuscitative, curative, rehabilitative, and palliative services, as well as their necessary resources. The ultimate aim of the UHC Compendium is to inform countries in selecting their benefit packages, while keeping in mind resource requirements and costs. I worked on linking data from the Global Burden of Disease and the Disease Control Priorities to the Compendium architecture, as well as reviewing and revising specific interventions and actions. I also worked with the Global Health Cluster to create a high priority package of health services for humanitarian settings based on the Compendium structure.
Gaps and Opportunities for Improved Water Practices in Intibuca, Honduras	The department of Intibucá in southern Honduras is divided into 17 smaller municipalities, each home to a number of rural communities. Water quality has been a constant issue in Honduras, exacerbated by Hurricane Mitch in 1998, which the president at the time stated set the country back 50 years in economic development. Shoulder to Shoulder, an established NGO in Intibucá, relayed to me that community clinics are noticing a higher prevalence of diarrhea among the children. The community sought to understand the attitudes surrounding water cleaning practices in the region, from an administrative level and on a family level. The community has made great strides in standardizing WASH practices, collectively organized by water-focused volunteers called the "juntas de agua". Shoulder to Shoulder's long-time presence offered great resources and coordination of my research and hands-on fieldwork, which directly addressed the needs brought forth by the community. My practicum focus was to conduct a needs-assessment regarding water practices, sanitation, and children's diarrhea in the rural mountainous regions of Intibuca, Honduras. The project was two-fold -- 1) conduct objective on-site testing of water for E. Coli at various points along the chain of water, from the natural spring source to consumption; and 2) qualitative interviews with schoolteachers, water administrators, clinicians, and family members of children under 5 years old.

Promoting character skills that support loving relationships and flourishing in schools in Spain & the UK	My practicum was with the Harvard Human Flourishing Program in collaboration with the Graduate School of Education and looked at interventions that could be done in elementary schools in Spain and the UK to develop character skills that support close relationships and flourishing. The study was a double-blinded, randomized control trial conducted across 6 schools in the United Kingdom (UK) and Spain that analyzed the effects of a gratitude intervention on different aspects of flourishing in school-aged children.
TeamBirth & Gestational Diabetes: Incorporating Shared Decision Making in OSU's Residency Curriculum	My practicum project was with Ariadne Labs with the Delivery Decisions Initiative. I worked with the TeamBirth model to help develop an outline for the residency curriculum at Oklahoma State University. TeamBirth is an initiative to help support the development of a high-performing care team and to make sure that every member of the care team is considering the same relevant information at the same time, with a shared model of what to do when important labor decisions need to be made. An important part of this process is to incorporate shared decision-making part of the medical education curriculum. In this regard, the goal of the curriculum is to incorporate communication skills into didactic and simulations that are already part of the residency curriculum.
Health System Financing at the World Bank	This practicum project involved the student supporting various tasks that focused on health system financing in the Europe and Central Asia Region. During her contract, the student provided research assistance for two tasks: (1) Finalizing a report that analyzed the purchasing behaviors of Armenia and Romania during the COVID-19 pandemic, (2) Developing a report based on the actuarial costing data of expanding Universal Health Coverage to the entire population of Armenia. In addition, the student also supported the team by: (1) Tracking and monitoring operational tasks across the Armenia and Bosnia and Herzegovina teams, and (2) Performing copy-edits of a nearly-finalized report that explored the impact of health taxes in Armenia. These reports are a part of the World Bank’s technical support towards universal health coverage in Armenia, which includes advisory and analytical services aimed at supporting the government’s efforts to expand access to high-quality health care.
Case Training – Negotiation between local and international actors in	As migration increases due to climate change, we expect escalating conflicts between local organizations, who are invariably the first responders, and international organizations, who are better resourced. Therefore, this practicum aimed to build negotiation tools for conflict resolution between local and international actors. We explored this relationship in Poland, which has a complex

migration from Belarus and Ukraine to Poland	environment with Ukrainian refugees and Belarussian migrants, through the direct understanding organizational narratives. The UNHCR estimates that there are currently 8.1 million Ukrainian refugees across Europe. The practicum used this complex environment to build a case scenario that can be used for simulation training by our client which delivers negotiation training to humanitarian actors. We interviewed global and local organizations operating in Poland in 2023 and used the interviews conducted by our advisor in 2022 in the same context. These interviews were analyzed and categorized into typologies of narratives in norms and facts. Subsequently, a fictional case simulation based on these interviews was built to provide training. This simulation will help future humanitarians in the frontlines to understand narratives, elaborate stakeholder maps, build alliances, and make possible negotiations between groups that could work better in collaboration instead of confrontation.
Hepatitis C test and treat program	My practicum project was centered on writing a proposal for a Hepatitis C Virus(HCV) testing and treatment program in Laredo, Texas with Wellness Equity Alliance. HCV infection is prevalent among certain marginalized groups in the United States (US). These include people who inject drugs, incarcerated individuals, pregnant women, the homeless, and migrants. Identification and testing of individuals is adequate however retention and follow-up of treatment were poor and my role was to work with the team to address the barriers to retention and completing treatment in the program design
Lead Case Study at the Harvard Health System Innovation Lab on a Telemedicine Health Startup in Pakistan	I had the opportunity to lead a case study at the Harvard Health System Innovation Lab, under the guidance of Dr. Rifat Atun and Che Reddy, for my practicum. The case study was on a telemedicine startup in Pakistan that is currently one of the leading eHealth services in the country. For my practicum, I interviewed 11 stakeholders, including the startup founders, key team members, early investors and corporate partners, and clients, to gain a deeper insight into the journey of the startup. I explored the vision, mission, and execution strategies of the startup to achieve success in the digital health space in the region. Through this experience, I developed a better understanding of the eHealth startup ecosystem, particularly in low and middle-income countries.

	Conducting interviews for the case study allowed me to gain valuable insights into the digital health landscape in Pakistan, and the challenges faced by telemedicine services during their early adoption stages in developing countries. Moreover, I was able to uncover some of the sociocultural, economic, and political factors that influence the success or failure of health startups in general. The experience also gave me valuable lessons on entrepreneurship, which I believe will greatly benefit me in the future. Overall, my practicum at the Harvard Health System Innovation Lab was a significant learning experience that helped me expand my knowledge and skills in the field of global health.
The Impact of COVID on Surgical Waitlists and the Health System Response	Background: The COVID-19 pandemic resulted in a national lockdown in Chile and delays in surgical care. This study aims to assess the effects of COVID-19 and Chile's counteracting policies on surgical waitlist lengths a public hospital. Methods: Data on surgical waitlists at the closing of the year from 2016 to 2022 were obtained from Hospital La Florida. A one-way ANOVA with a Bonferroni correction was used to determine which years had a statistically significant difference in surgical waitlist times. The aggregate data for all surgical specialties was used to analyze which years had a statistically significant difference. Results: There was a notable decrease in waitlist length each year from 2016 to 2019, with a statistically significant difference in waitlist length in 2016 and 2017 compared to 2019 ($p = < 0.001$ and 0.023, respectively), and a nonsignificant difference in 2018 ($p = 1.00$). In 2020, there was a significant increase in waitlist length compared to 2019 ($p = 0.001$). The waitlist lengths returned to pre-pandemic levels after 2020, with no difference in waitlist lengths in 2021 and 2022 when compared to 2019 ($p= 0.31$ and 1.00, respectively). Conclusion: The COVID-19 pandemic resulted in significantly increased surgical waitlists, with large improvements in waitlist lengths through Chile's varied policies in resource management, budgeting, efficiency, and collaboration. Further work should assess which strategies were most successful in shortening surgical waitlists to continue removing the burden of surgical delays for patients.

Building sustainable operating rooms within the Canadian heath care system	My practicum was a project within the expanding field of health care sustainability, with a focus on perioperative sustainability practices. Operating rooms are a major source of carbon emissions and waste within the hospital. Given that climate change affects the health of populations at every level, a sector with the mandate to protect health should also be aligned with climate change mitigation and adaptation strategies. Our team at the Centre for Sustainable Health Systems, affiliated with the Dalla Lana School of Public Health at the University of Toronto, produced information resources for health care teams to engage in climate change mitigation practices. One major publication from this practicum was the "Sustainable Perioperative Care Playbook." My primary responsibilities included writing sections of the report, analyzing themes, brainstorming change ideas, fact-checking, and updating resources.
Primary Care Decentralization and Health System Resilience during COVID-19: Comparison between Chile and Indonesia	Both Indonesia and Chile have been implemented decentralization since decades ago. However, the implementation process of decentralization in both countries have yielded a varying result in the intended effect on health system. While both Indonesia and Chile shared similarity in some context such as geographical, socio-economic, and politic, there are seemingly some difference results in the performance of decentralized primary health care. This study aims to look for evidence about to what extent the decentralization process has affected primary health care performance in Indonesia and Chile and comparing both countries decentralization process and primary health care performances. This study is a mixed-methods study with a sequential-explanatory design and the qualitative part involving an interview with stakeholder to assess the extent of decentralization using decision space framework. The quantitative part involving obtaining sub-national level data of diabetes visit and immunization coverage, analyze the data using multiregresional interrupted time series analysis to look for the performance of both services during the pandemic period. The results show that decision space in the decentralization process has an important effect on the overall health system's resilience.
European Healthtechnology	For my practicum, I worked as an Investment and Research Analyst at Octopus Ventures, a Venture Capital firm with a particular focus on health. Octopus Ventures champions disparate world views and diverse skill sets for a shared purpose; to invest in a world that we, and future generations, can be proud of. The work involved an analysis of global health systems, specifically analysing the potential for the adoption and diffusion of health innovations within health systems in Europe. I led

	this analysis utilising the Atun et al. Complex Innovation Framework (CIF) for analysing global health systems. As per the learning agreement, the analysis was complemented by interviews with founders of health start-ups across Europe. I conducted a thematic analysis of interviews with founders/ ventures from different health system settings to inform our suggestions for decision-making for health start-ups which seek to expand internationally.
Early Childhood Development in Brazil	I worked with The Brazilian Center for Early Child Development (CPAPI) on an early childhood development (ECD) intervention in a Basic Health Unit in Sao Paolo, Brazil. I conducted a literature review on the effects of the Covid-19 pandemic on responsive caregiving and child safety and security. I also worked with the Basic Health Unit to develop educational materials to improve caregiver knowledge and promote ECD, as well as survey tools to collect qualitative data to assess the intervention.
Juntas de Salud de Costa Rica: A mechanism of citizen participation to increase access, quality and efficiency of a healthcare system.	The Juntas de Salud, or Citizen Healthcare Councils, are a mechanism of citizen participation in Costa Rica aimed at increasing access, quality, and efficiency in the healthcare system. The study, conducted in January 2023, involved field visits to various healthcare facilities and multi-level interviews with citizens, healthcare workers, and government leaders. Key learnings from the study suggest that training in healthcare systems for both citizens and local healthcare workers is essential for effective communication. Incentivizing citizen participation through local social prestige is also important. At the management level, constant training, agile regulations, and keeping citizen councils politically neutral are crucial. Lastly, political support for citizen involvement is necessary, along with training leaders to understand how citizens can contribute positively to the system. To scale citizen participation globally, a research agenda should be developed to classify healthcare systems based on citizen engagement levels. Best practices can then be identified and implemented in other systems, with evaluations conducted to measure the impact of these arrangements on various performance goals.
Hearing Loss and Vestibular Disorders	In the world, there are about 430 million people that suffer from hearing loss of those 48 million people are in the US and 5 million in Colombia. From the total of people with hearing loss, just 20% of

Prevalence and Influence in Quality of Life During Conflict	them receive a diagnosis and treatment. The study was conducted in the department of Antioquia, Colombia in the town of Santa Rosa de Osos in people over 18 years old that have been previously affected directly or indirectly by the armed conflict. We used a prospective cohort design of 79 patients using a mixed method convergent parallel design by applying quantitative data collection using mobile audiometries to assess the hearing degree of patients at different frequencies and the examination of vertigo was done using a video head impulse test (vHIT). We used a prospective cohort design of 79 patients using a mixed method convergent parallel design by applying quantitative data collection using mobile audiometries to assess the hearing degree of patients at different frequencies and the examination of vertigo was done using a video head impulse test (vHIT). Our results demonstrated that 33/79 patients (41%) compared to the general prevalence of hearing loss in Colombia of 17%. Additionally, the prevalence of vestibular disorders was 30/79 (37.97%). The prevalence of tinnitus was 10/79 (12%) and the mean THI was 42/100 which is a moderate effect on quality of life. In conclusion, we found that the armed conflict in Colombia had a large burden of patients' hearing and vestibular health. Most patients had their hearing and balance objectively assess for the first time and the healthcare system in Colombia has neglected the assessment of disabilities such as hearing loss or vestibular disorders which affect peoples' quality of life.
Health Systems, Cancer and Cardiovascular Disease in Latin America	Worked with the Harvard Health Systems Innovation Lab and lead the creation of a health system innovations and cancer care learning network in Latin America, to address knowledge gaps, foster co-learning and collaboration between stakeholders innovating to strengthen cancer care delivery within the region. In addition, organized a hackathon with 500+ participants at 5 in-person venues and remote, to develop innovative solutions for cancer and cardiovascular disease in Latin America. 6 winning teams, with digital innovations to strengthen health systems' response to cancer and cardiovascular disease will join the Incubation Lab and will receive funding from various partners to start or scale-up their innovations.
Lessons from India's Ayushman Bharat Pradhan Mantri Jan Arogya Yojana	I worked as a research assistant at Reform for Resilience Commission (R4R), which is housed at Harvard T. H. Chan School of Public Health. R4R decided to take up a project of documenting India's experience in the implementation of AB PMJAY. I worked under the supervision and guidance of my preceptor Dr Patricia Geli, Executive Director of R4R. The focus of the project was on identifying lessons learned including mistakes to be avoided in the future with specific focus on low- and middle-

	income countries. During the project, we researched India’s and other health insurance schemes to understand commonalities and differences in contexts. For the purpose of the practicum, I particularly focused on engagement with healthcare providers. India had experience of engaging with private healthcare providers in the earlier scheme called Rashtriya Swasth Bima Yojana (RSBY), but it was on a limited scale. This was the first time that private providers were engaged on this scale (approximately 12 thousand private providers). This presented numerous complexities to the administration. These included various factors and nuances that affect the design of empanelment criteria, provider payment mechanism, and fraud and abuse in the health insurance sector. Different strategies were adopted for private and public healthcare providers. We discussed reasons for these and identified key lessons learned. The present analysis does not endorse a universal application of India's experience to all nations. Rather, it endeavors to present an overview that can be contextualized in relation to other countries.